

# PATENT COOPERATION TREATY

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From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/EP2004/014153

International filing date (day/month/year)  
09.12.2004

Priority date (day/month/year)  
18.12.2003

International Patent Classification (IPC) or both national classification and IPC  
C08G12/32, C09J161/28, B27D1/04

Applicant  
DSM IP ASSETS B.V.

### 1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 68.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

### 3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/EP2004/014153

**Box No. 1: Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/EP2004/014153

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Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

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1. Statement

Novelty (N)	Yes: Claims	8
	No: Claims	1-7,9-17
Inventive step (IS)	Yes: Claims	
	No: Claims	1-17
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	

2. Citations and explanations

see separate sheet

re item V

**Cited documents**

D1: WO-A-0138416

**Novelty (Article 33(2) PCT)**

D1 (page 1, lines 5 - 23) discloses binders for use in the manufacture of composite panels, such as plywood. Example 3 (treatment number 5) discloses a melamine-urea-formaldehyde ("MUF") binder with the following characteristics

(1)  $n(F)/n(NH_2) = 0.38$

(2)  $m(Me) + m(F) + m(U) = 100\text{ g}$

(3)  $m(Me) = 30\text{ g}$

with  $n(F)$  being the molar amount of formaldehyde in the MUF resin,  $n(NH_2)$  being the molar amount of amine groups in the MUF resin,  $m(Me)$ ,  $m(F)$  and  $m(U)$  being the mass of melamine, formaldehyde and urea in the MUF resin, respectively.

The molar amount  $n$  and mass  $m$  are linked via the molar mass  $M$  according to the formula  $M=m/n$ . The molar mass of formaldehyde, urea and melamine is 30 g/mol, 60 g/mol and 126 g/mol respectively.

Equation (3) ( $m(Me) = 30\text{ g}$ ) can thus be rewritten as  $n(Me) \cdot M(Me) = 30\text{ g}$  and with  $M(Me)$  being 126 g/mol, it follows that

$n(Me) = 0.24\text{ mol}$  (equation (4)).

Further from equations (2) and (3), it follows that  $m(F) + m(U) = 70\text{ g}$  or in other words  $m(U) = 70\text{ g} - m(F)$ . Reverting this to molar amounts gives  $n(U) \cdot M(U) = 70 - n(F) \cdot M(F)$  and with  $M(U) = 60\text{ g/mol}$  and  $M(F) = 30\text{ g/mol}$ , it follows that

$n(U) = 1.17 - 0.5\ n(F)$  (equation (5)).

Taking into account that urea has two  $NH_2$  groups and melamine 3  $NH_2$  groups, the number of moles of  $NH_2$  groups  $n(NH_2)$  can be written as

$n(NH_2) = 2n(U) + 3n(Me)$  (equation (6))

Inserting equation (6) in equation (1) results in

$$n(F) = 0.38 \cdot (2n(U) + 3n(\text{Me})) = 0.76n(U) + 1.02n(\text{Me}) \text{ (equation (7))}.$$

Inserting equation (4) in equation (7) gives

$$n(F) = 0.76n(U) + 0.245 \text{ (equation (8))}$$

Finally, inserting equation (5) in equation (8) results in

$$n(F) = 0.76 \cdot (1.17 - 0.5n(F)) + 0.245 = 0.89 - 0.38n(F) + 0.245.$$

This can be rewritten to

$$1.38 n(F) = 1.135, \text{ i.e.}$$

$$n(F) = 0.82 \text{ mol.}$$

From this it follows that the ratio  $n(F) : n(\text{Me})$  is  $0.82:0.24$  which is equal to  $3.43:1$ , which fully lies within the claimed range.

Further a ratio  $n(F) : n(\text{NH}_2) = 0.38$  (equation (1) above)) as given in the example of D1 corresponds to a ratio of  $n(F) : n((\text{NH}_2)_2) = 0.76$ , fully lying within the claimed range (note that  $n((\text{NH}_2)_2) = 0.5 n(\text{NH}_2)$ ).

Consequently, both the  $F/(\text{NH}_2)_2$  as well as the  $F/T$  ratio in terms of the present application lie within the claimed range. Thus, the subject-matter of at least claims 1 - 7 and 9 - 17 lacks novelty over D1.

With respect to claim 9, it is noted that the fact that the above example of D1 applies MDI does not render this claim novel over D1 as

- (i) the wording "essentially no pMDI" in this claim does, due to the ambiguity of "essentially", not pose any restriction to the amount of pMDI in this claim. Hence, irrespective of which amount of pMDI is applied in the example of D1, this amount cannot be a feature distinguishing the subject-matter of claim 9 over D1;
- (ii) the amount of pMDI applied in D1 is as low as less than 0.1 - 4 wt% (page 5, lines 19 - 26) which amount is clearly covered by the wording "essentially no pMDI".

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/EP2004/014153

**Inventive step (Article 33(3) PCT)**

It is not clear which problem is solved by the claimed subject-matter over D1. Hence, the subject-matter of all claims lacks inventive step over this document.

**Miscellaneous**

(A) The term "the adhesive layer" in item (b) of claim 13 lacks proper antecedent.

(B) If the Applicant intends to amend the application, he should

- (i) Identify **each and every** amendment, preferably by including the amendments in handwriting into the original text and
- (ii) indicate for **each and every** amendment where support can be found in the original disclosure.